

AMENDMENTS TO THE CLAIMS:

Please cancel claims 21-45 as indicated on the following listing of all the claims in the present application after this Amendment:

1. (original) A method of programming a plurality of non-volatile memory cells to have a plurality of threshold voltage levels, the method comprising:
 - programming the memory cells with at least one voltage pulse;
 - after at least one voltage pulse, continuing programming if no memory cell has reached or exceeded a first predetermined threshold voltage level, the first predetermined threshold voltage level representing a first set of data bits;
 - inhibiting programming of any memory cell that has reached or exceeded the first predetermined threshold voltage level;
 - determining whether all memory cells selected to store the first set of data bits have reached or exceeded the first predetermined threshold voltage level;
 - if at least one memory cell selected to store the first set of data bits has not reached or exceeded the first predetermined threshold voltage level, continuing programming of uninhibited memory cells;
 - if all memory cells selected to store the first set of data bits have reached or exceeded the first predetermined threshold voltage level, determining whether all memory cells selected to store second or third sets of data bits have reached or exceeded the first predetermined threshold voltage level;
 - if at least one memory cell selected to store second or third sets of data bits has not reached or exceeded the first predetermined threshold voltage level, continuing programming uninhibited memory cells until all memory cells selected to store second or third sets of data bits have reached or exceeded the first predetermined threshold voltage level; and
 - if all memory cells selected to store second or third sets of data bits have reached or exceeded the first predetermined threshold voltage level, continuing programming all memory cells selected to store second or third sets of data bits.

2. (original) The method of Claim 1, further comprising receiving a plurality of data bits corresponding to a plurality of predetermined threshold voltage levels to be programmed in the memory cells.

3. (original) The method of Claim 1, further comprising selecting a group of memory cells to program.

4. (original) The method of Claim 3, wherein the selected group comprises over 1000 cells.

5. (original) The method of Claim 1, wherein the non-volatile memory cells are configured in a NAND-type array.

6. (original) The method of Claim 1, wherein the non-volatile memory cells are configured in a NOR-type array.

7. (original) The method of Claim 1, wherein the non-volatile memory cells form an electrically-erasable, programmable read only memory (EEPROM).

8. (original) The method of Claim 1, wherein the non-volatile memory cells form a flash memory.

9. (original) The method of Claim 1, wherein programming comprises applying a voltage pulse with a predetermined amplitude.

10. (original) The method of Claim 1, wherein programming comprises storing charge on a floating gate transistor in each uninhibited memory cell.

11. (original) The method of Claim 1, wherein continuing programming if no memory cell has reached or exceeded a first predetermined threshold voltage level comprises

applying a voltage pulse to the memory cells with an amplitude higher than an amplitude of a previous voltage pulse.

12. (original) The method of Claim 1, further comprising determining whether any memory cell has reached or exceeded a first predetermined threshold voltage level.

13. (original) The method of Claim 12, wherein determining whether memory cells have reached or exceeded a first predetermined threshold voltage level comprises applying a first verify voltage to the memory cells and determining whether the memory cells are activated.

14. (original) The method of Claim 1, wherein inhibiting programming of any memory cell that has reached or exceeded the first predetermined threshold voltage level comprises:

inhibiting programming of memory cells selected to store the first set of data bits during a remainder of the method; and

inhibiting programming of memory cells selected to store second or third sets of data bits during a first programming period.

15. (original) The method of Claim 1, wherein determining whether all memory cells selected to store second or third sets of data bits have reached or exceeded the first predetermined threshold voltage level comprises applying a first verify voltage to the memory cells and determining whether the memory cells are activated.

16. (original) The method of Claim 1, further comprising:

after at least one voltage pulse, continuing programming of uninhibited memory cells if no memory cell has reached or exceeded a second predetermined threshold voltage level, the second predetermined threshold voltage level representing the second set of data bits;

inhibiting programming of any memory cell that has reached or exceeded the second predetermined threshold voltage level;

determining whether all memory cells selected to store second or third sets of data bits have reached or exceeded a second predetermined threshold voltage level;

if at least one memory cell selected to store the second or third sets of data bits has not reached or exceeded the second predetermined threshold voltage level, continuing programming of uninhibited memory cells;

if all memory cells selected to store the second or third sets of data bits have reached or exceeded the second predetermined threshold voltage level, determining whether all memory cells selected to store the third set of data bits have reached or exceeded the second predetermined threshold voltage level;

if at least one memory cell selected to store the third set of data bits has not reached or exceeded the second predetermined threshold voltage level, continuing programming uninhibited memory cells selected to store the third set of data bits until all memory cells selected to store the third set of data bits have reached or exceeded the second predetermined threshold voltage level; and

if all memory cells selected to store the third set of data bits have reached or exceeded the second predetermined threshold voltage level, continuing programming all memory cells selected to store the third set of data bits.

17. (original) The method of Claim 1, wherein the memory cells are coupled to a word line.

18. (original) The method of Claim 1, further comprising inhibiting programming of memory cells that are selected to store a fourth set of data bits.

19. (original) The method of Claim 1, further comprising repeating the method for another group of memory cells.

20. (original) A method of using a plurality of non-volatile memory cells, the method comprising:

storing charge in the memory cells;

continuing storing charge in the memory cells if no memory cell has reached or exceeded a first predetermined charge level, the first predetermined charge level representing at least two data bits;

inhibiting storing charge in any memory cell that has reached or exceeded the first predetermined charge level;

determining whether all memory cells selected to store the first predetermined charge level have reached or exceeded the first predetermined charge level;

if at least one memory cell selected to store the first predetermined charge level has not reached or exceeded the first predetermined charge level, continuing storing charge in uninhibited memory cells;

if all memory cells selected to store the first predetermined charge level have reached or exceeded the first predetermined charge level, determining whether all memory cells selected to store second or third predetermined charge levels have reached or exceeded the first predetermined charge level; and

if at least one memory cell selected to store second or third predetermined charge levels has not reached or exceeded the first predetermined charge level, continuing storing charge in uninhibited memory cells until all memory cells selected to store second or third predetermined charge levels have reached or exceeded the first predetermined charge level.

21. - 45. (Cancelled)